UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/541,631	04/03/2000	Alan Balkany		4315

7590 04/07/2004

Balkany
5693 Cooley Villiage Dr
Apt 2
Waterford, MI 48327

EXAMINER	
TO, BAOQUOC N	

ART UNIT	PAPER NUMBER
2172	11

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/541,631	BALKANY, ALAN	
	Examiner	Art Unit	
	Baoquoc N To	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 and 6 are amended and claims 11-17 are newly added. Claims 1-17 are pending in this application.

Response to Arguments

2. Applicant's arguments filed 01/09/04 have been fully considered but they are not persuasive.

The applicant argues "Nowhere does Bugajski teach the concept of the length of a tuple sequence as a means to represent of tuples and direct the examiner to the specification part 1, page 7-8"

The examiner respectfully disagrees with the above argument because Bugajski suggests "the storing of the size of entries of table" (col. 11, lines 1-16). The length of a tuple sequence is the size of a entry of the record in the table. The claims are interpreted in light of the specification, limitation from the specification are not read into the claim, In re Van Guens 988 F.2d 1181, 26 USPQ2d 1057 (Fed.Cir 1993). It is reminded that Applicant cannot rely on the specification to impart to the claims limitations not recited therein. Such reliance is ineffective to define over the prior art. In re Lundberg, 244 F2d 543, 113 USPQ 530 (CCPA 1957); In re Winklans, 188 USPQ 129 (CCPA 1975). Applicant are further reminded of the clear difference between reading the claim in light of the specification as allowed by 35 U.S.C. 112, 6th paragraph, and by In re Donaldson 29 USPQ2rd, 1845, 16 F.3d 1189 (Fed. Cir, 1994), and reading limitations of the specification into the claims In re Prater 415 F2d 1393,

162 USPQ 541 (CCPA 1969). Further, the Applicants always have the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified, In re Prater, 162 USPQ 541, 550-51 (CCPA 1969).

The applicant argues "Mutually-consecutive tuples which are defined at the bottom of page 7, and nowhere does Bugajski teach the concept of runs of mutually-consecutive tuples."

The examiner respectfully disagrees with the above argument because this feature is not in claim 1, however, if the applicant would like to incorporate the language of this feature into claim 1 to bring out the novelty of the present invetion. The examiner invites such amendment.

The applicant also argues "nowhere does Bugajski teach the concept of a gate field to improve search efficiency."

The examiner respectfully disagree with the above argument because claims one does not include this feature; however, if the applicant would like to incorporate language of this feature into claim 1 to bring out the novelty of the present invention. The examiner invites such amendment.

The applicant argues "Bugajski does not teach the concept of leaf nodes with only indexes"

The examiner respectfully disagrees with the above argument because this is not in claim. The claim only states "each dictionary contains a numeric index for each unique value in the corresponding sequence."

The applicant argues "Bugajski does not show leaves that are separate from dictionaries."

The examiner respectfully disagrees with the applicant because Bugajski suggests the creating of tables and dictionary wherein the dictionary index and values are stored in memory tale of the nodes, corresponding to the branch or children (col. 9, lines 54-60). Tables are the leaf nodes which are distinct from the dictionary.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bugajski (US. Patent No. 5,592,667).

Regarding on claim 1, Bugajski teaches a method for storing a plurality of parallel data element sequences comprising:

(a) creating a dictionary of unique values for each of said data element sequences (dictionary created for each field), wherein each dictionary contains a numeric index for each unique value (each field value is associated with numerical index values...however, leads to the creation of a table of associative memories whose two components are indexes to the memory tables of the nodes corresponding to the derivative branches or "children") (col. 9, lines 61);

(b) forming an n-aray tree with leaf and interior nodes (each leaf and non-terminal leaf in the tree 105 and 108) (col. 9, lines 57-58) where:

(1) each leaf node corresponds to one of said dictionaries (a dictionary is created for each field represented the terminal or leaf nodes) (col. 9, lines 61-65),

(2) each interior node (each none-leaf or non-terminal node in the tree (such as 105, 108 etc.) associates a numeric index with tuples of numeric indexes from the other subordinate leaf or interior nodes (braches or children) (col. 9, lines 56-61), and

Bugajski does not explicitly teach (3) interior nodes are capable of storing one or more sequences of tuples using the length of said tuples. However, Gugajski teaches, "for example assuming that there are 24 entries in the "vehicle name" table and 16 entries in the "plant code" table, resulting in a non-terminal node having a total of 30 entries representative of the unique combination between two child nodes, the size of the parent node is equal to 30*(1+log216) or 115 bits, where 30 represents the entries in the table" (col. 11, lines 6-16). This teaches one or more sequences of tuple suing the length of said tuples are equivalent to the "storing the 30 entries from the two child nodes". Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention was made to modify the step of storing the 30 entries of two child nodes as taught by Bugajski as to storing the sequences of tuples using the length of the tuples in order to defining the storage to store the records.

Regarding on claim 2, Bugajski teaches each unique value of a leaf node and each unique tuple of an interior node is associated with a count of the number of times

that value or implied tuple of values occurred in the parallel data element sequences (col. 4, lines 56-67 and col. 4, lines 1-5).

Regarding on claim 3, Bugajski teaches a means for efficiently processing a subset of a tree's leaves, comprising the following steps:

(a) defining a gate field in each interior nodes(each field value associated with a numerical index value) (col. 9, lines 55-59),

(b) setting the value of said gate field in each said interior node, to indicate which of said interior node's branches lead to leaf nodes in said subset (children or branches) (col. 9, lines 55-69).

(c) following paths that lead to said leaf nodes (col. 12, lines 55-67 and col. 13, lines 1-12), and

(d) processing said leaf nodes encountered (col. 12, lines 55-67 and col. 13, lines 1-12).

Regarding on claim 4, Bugajski teaches selectively disabling storage of tuple runs using the sequence length at certain interior nodes (col. 10, lines 60-65).

Regarding on claim 5, Bugajski teaches the method for arranging said n-ary tree comprising the steps of:

(a) defining a problem comprising:

(1) a set of states such that each state contains a set of leaves and zero or more interior nodes, each with two or more other nodes as children (col. 9, lines 54-57),

(2) a value function, giving a numeric ranking of the value of any state's design (col. 9, lines 54-57),

(b) defining one or more operators that transform one state to another (col. 9, lines 54-57), and

(c) searching the problem space, starting from an initial state and applying operators to move to other states until a state with an acceptable n-ary design is reached (col. 9, lines 54-57).

Regarding on claim 6, Bugajski teaches a method for storing a plurality of parallel data element sequences comprising the steps of:

(a) creating a dictionary of unique values for each of said data element sequences to form a set of dictionaries, wherein each dictionary contain a numeric index for each unique value in the corresponding sequence (each field value is associated with numerical index values...however, leads to the creation of a table of associative memories whose two components are indexes to the memory tables of the nodes corresponding to the derivative branches or "children") (col. 9, lines 55-65); ,

(b) forming one or more n-ary trees with leaf and interior nodes (each leaf and non-terminal leaf in the tree 105 and 108) (col. 9, lines 57-58) where:

(1) said leaf nodes are distinct from said dictionary and each said leaf node is capable of representing values from one of said dictionaries using number indexes into said dictionary; and

(2) each said interior node (each none-leaf or non-terminal node in the trees (such as 105, 108 etc.) associates a numeric index with tuples of numeric

indexes from other subordinate leaf or interior nodes (branches or children) (col. 9, lines 56-61).

Bugajski does not explicitly teach one or more n-ary trees are capable of sharing said dictionaries. However, Bugajski suggests "at node 108 for example, an associative memory table will be based upon the two dictionaries created with regard to the terminal nodes representative of the fields "vehicle name" and "plant code," whereas, at node 106, the associate memory table components will comprise the dictionary crated with respect to "tire brand" and the associate memory table previously created which corresponds to node 108. This process is continued until a final associative memory table is created with regard to each unique vehicle ID code at node 102." (col. 9, line 67 and col. 10, lines 1-9). This teaches the dictionaries are shared from the node 102. Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention was made to modify the sharing of dictionary from the node 102 in order to access the data in the hierarchical structure.

Regarding on claim 7, Bugajski teaches each unique values of a leaf node or each unique tuple of an interior node is associated with a count of the number of time that value or implied tuple of values occurred in the parallel data element sequences (col. 4, lines 56-67 and col. 4, lines 1-5).

Regarding on claim 8, Bugajski teaches a means for efficiently processing a subset of a tree's leaves, comprising the following steps:

(a) defining a gate field in each interior node (each field value associated with a numerical index value) (col. 9, lines 55-59),

(b) setting the value of said gate field in each said interior node, to indicate which of the said interior node's branches lead to leaf nodes in said subset (children or branches) (col. 9, lines 55-69).

(c) following path that lead to said leaf nodes; and

(d) processing said leaf nodes encountered.

Regarding on claim 9, Bugajski teaches creating an additional tree, t, using s subset of the same fields of the first tree, f, comprising the step of:

(a) finding a ancestor node in tree f, of the leaf nodes in f corresponding to said subset of fields (104. fig. 1);

(b) looking up the tokens of said leaf nodes corresponding to said subset of tokens in said ancestor (col. 9, lines 55-60);

(c) inserting said leaf node token into tree, t (col. 10, lines 5-10).

Regarding on claim 10, Bugajski teaches the method for arranging said n-ary tree comprising the steps of:

(a) defining a problem space comprising:

(1) a set of states such that each state contains a set of leaves and zero or more interior nodes, each with two or more other nodes as children (col. 9, lines 54-57),

(2) a value function, giving a numeric ranking of the value of any state's design (col. 9, lines 54-57),

(b) defining one or more operators that transform one state to another(col. 9, lines 54-57), and

(c) searching the problem space, starting from an initial state and applying operators to move to other states until a state with an acceptable n-ary tree design is reached (col. 9, lines 54-57).

Regarding on claim 11, Bugajski teaches interior nodes are capable of storing one or more of said tuple sequence using a single tuple in combination with said sequence length (col. 11, lines 1-16.

Regarding on claim 12, Bugajski teaches one or more of said sequences is a sequence of mutually-consecutive tuples (col. 11, lines 11-16).

Regarding on claim 13, Bugajski teaches numeric indexes are an array of counts, wherein each count is the number of times the corresponding dictionary value at the same index has occurred (co. 9, lines 54-67).

Regarding on claim 14, Bugajski teaches numeric indexes are a bit array, wherein each bit in said array cells the presence of the corresponding dictionary value at the same index, in said parallel data element sequences (col. 9, lines 54-67).

Regarding on claim 15, Bugajski teaches leaf node is capable of representing a subset of said dictionary's values, using a subset of numeric indexes from said dictionary (col. 9, lines 54-67).

Regarding on claim 16, Bugajski teaches method uses an estimate of interior node size, from a function of the sizes of said interior node's child process (col. 11, lines 1-16).

Regarding on claim 17, Bugajski teaches method uses an estimate of interior node size, from a function of the sizes of said interior node's child node (col. 11, lines 1-16).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is (703) 305-

1949 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at (703) 305-9790.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231.

The fax numbers for the organization where this application or proceeding is assigned are as follow:

(703) 872-9306 [Official Communication]

Hand-delivered responses should be brought to:

Crystal Park II
2121 Crystal Drive
Arlington, VA 22202
Fourth Floor (Receptionist).

Baoquoc N. To
April 3, 2004

John E. Breene

JOHN BREENE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100